



Potomac Acquisition Cost/Benefit Analysis



DRAFT

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| | |
|------------------------------|-----------|
| BACKGROUND | 3 |
| FINANCIALS | 4 |
| LAND | 5 |
| COST/BENEFIT ANALYSIS | 12 |
| APPENDIX | 18 |

DRAFT

Background

The Trust Land Management Division (TLMD), a division of the Department of Natural Resources and Conservation (DNRC), is pursuing a bid for the State of Montana to take ownership in blocked sections of land east of Bonner and south of Potomac within the Blackfoot River watershed. The Nature Conservancy (TNC) purchased these lands from Plum Creek Timber Company Inc. (PCTC) in 2008 and has the intention to dispose of them to an appropriate land management group in the near future.

TLMD is currently working with TNC and is in a position to implement legislation by purchasing lands in the Potomac block currently owned by TNC. If this acquisition takes place, the property would be managed under title 77, MCA. Title 77 trust lands are managed to produce revenues for the trust beneficiaries while considering environmental factors and sustaining resources that provide long term revenue. The division currently oversees 5.1 million surface acres of trust land, 481,797 of which are classified as forested acres. In context of the TLMD mission, acquisition of the Potomac lands would increase the income generating capacity of trust lands by expanding both forest acreage and the sustainable yield for the forest management program. The purpose of this report is to identify the overall investment strength of the Potomac acquisition for Montana's school trusts.

House Bill 674: During the 2009 Legislative Session, public and private organizations and individuals worked towards legislation that would authorize the State of Montana, through the State Board of Land Commissioners, to purchase these lands using general obligation bonds. House Bill 674 was drafted and eventually passed. The law authorizes the State of Montana to issue general obligation bonds in the amount of \$21,000,000 for the purchase of over 25,000 acres in the vicinity of Potomac, Montana. Pursuant with section 2.3 of HB 674, this report imparts a full cost/benefit analysis of the acquisition. In addition, as required by section 2.4 of the bill, the Department is conducting field reviews and inventories of roads, forest stand conditions, estimates of timber volumes, and a thorough review of the legal status of access roads within the analysis area. As this information is collected and analyzed, this report will be updated and refined. A final version will be available to the Land Board and the public by the time the Department requests final approval of the acquisition.

Financials

Bonds and Debt Service: The Potomac property will require a significant financial investment from DNRC and the State of Montana. In providing adequate funding for the transaction, HB 674 allows the Board of Land Commissioners to request the Board of Examiners issue and sell general obligation bonds to generate \$21 million for the purchase of real property. These bonds would be distributed in a single sale occurring in fiscal year 2011. State general funds would then be used for debt service scheduled over a twenty year period.

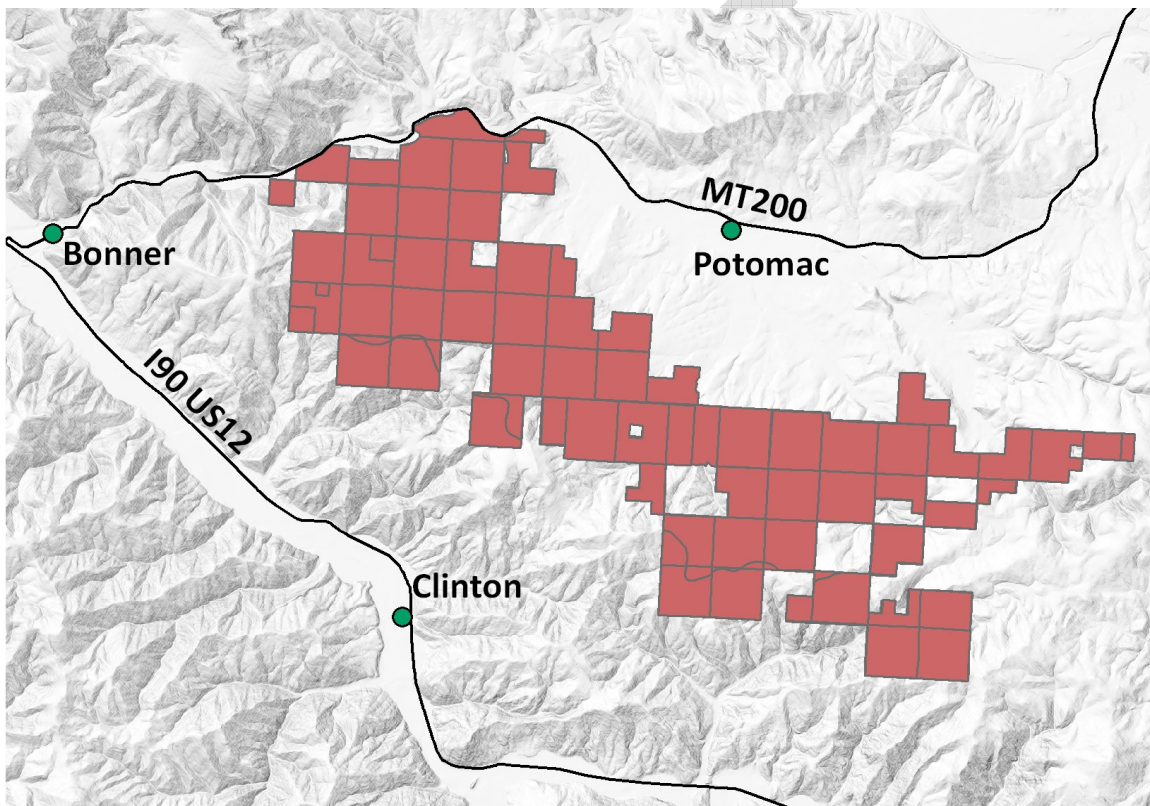
An amortization table for these general obligations bonds is provided in *Table 1*. Interest estimates were prepared by Piper Jaffray & Co. Debt service would cover an average coupon of 3.96 percent, and with service fees the final true interest cost (TIC) is estimated at 4.02 percent. Over twenty payments the average annual debt service is estimated at \$1,533,539, and the total at \$30,670,794. The final payment is scheduled to be made in August of 2030.

| Table 1. Bond Payment Schedule | | | | |
|---------------------------------------|---------------------|---------------------|---------------------|--------------------|
| FY | Ending | Debt Service | Principal | Interest |
| <i>i</i> | Bond Balance | | | 4.0240510% |
| 8/1/2011 | 20,210,000 | 1,533,356 | 790,000 | 743,356 |
| 8/1/2012 | 19,410,000 | 1,532,494 | 800,000 | 732,494 |
| 8/1/2013 | 18,595,000 | 1,534,494 | 815,000 | 719,494 |
| 8/1/2014 | 17,765,000 | 1,533,194 | 830,000 | 703,194 |
| 8/1/2015 | 16,915,000 | 1,534,519 | 850,000 | 684,519 |
| 8/1/2016 | 16,045,000 | 1,532,206 | 870,000 | 662,206 |
| 8/1/2017 | 15,150,000 | 1,532,194 | 895,000 | 637,194 |
| 8/1/2018 | 14,225,000 | 1,534,225 | 925,000 | 609,225 |
| 8/1/2019 | 13,270,000 | 1,534,163 | 955,000 | 579,163 |
| 8/1/2020 | 12,280,000 | 1,535,738 | 990,000 | 545,738 |
| 8/1/2021 | 11,255,000 | 1,534,850 | 1,025,000 | 509,850 |
| 8/1/2022 | 10,190,000 | 1,536,413 | 1,065,000 | 471,413 |
| 8/1/2023 | 9,085,000 | 1,535,144 | 1,105,000 | 430,144 |
| 8/1/2024 | 7,940,000 | 1,532,325 | 1,145,000 | 387,325 |
| 8/1/2025 | 6,750,000 | 1,531,525 | 1,190,000 | 341,525 |
| 8/1/2026 | 5,510,000 | 1,532,438 | 1,240,000 | 292,438 |
| 8/1/2027 | 4,220,000 | 1,531,288 | 1,290,000 | 241,288 |
| 8/1/2028 | 2,875,000 | 1,531,463 | 1,345,000 | 186,463 |
| 8/1/2029 | 1,470,000 | 1,532,619 | 1,405,000 | 127,619 |
| 8/1/2030 | 0 | 1,536,150 | 1,470,000 | 66,150 |
| Total | | \$30,670,794 | \$21,000,000 | \$9,670,794 |

* Prepared by Piper Jaffray & Co.

Land

Description: DNRC is currently analyzing 34,227 acres (highlighted in red) of the TNC lands connecting to the Blackfoot Drainage in the Potomac Valley. The block sits in Eastern Missoula County, approximately 2 miles from the county border with Granite County. Access roads exist within 20 highway miles of Missoula. Topography is a mixture of rolling and steep mountain terrain adjacent to irrigated crop and pasture valley basins. Some canyon features exist with multiple perennial creeks and a rise in elevation from below 4,500 ft in the valley up to 6,400 feet at its highest.



Roads and Access: The Potomac property is accessible by I-90 and US highway 200. Traditional mining and timber haul routes include a network of roads spanning south from highway 200 across the Potomac Valley. Many existing road segments that will be used for forest management activities (which lie both within and adjacent to the property) parallel and alter numerous stream channels. The existing levels of road erosion and sedimentation occurring along many of these stream channels will require work to meet best management practices (BMPs). This work could involve road re-location and obliteration, upgrading of drainage features, culvert and /or bridge replacement. Costs in updating roads are a part of the timberland management business however, and in this analysis will be incorporated as part of the total costs associated with timber sale preparation. To the benefit of DNRC, some of the anticipated road corrections are assumed to be completed by TNC before the time of the purchase agreement.

Regarding access, it is assumed that all traditional legal access routes will carry forward in the terms of the land purchase. Access issues have the potential to greatly offset the value of a land investment and if at some point access becomes an issue it will impact the value of the land and investment. As more information is collected, this report will be refined and updated to reflect any changes.

Forests: The entire property is former timber industry land and is primarily forested. Most areas have been logged at various times since the early 1900's resulting in stands of various age classes composed of ponderosa pine, Western larch, Douglas fir, lodgepole pine, Engelmann spruce and other mixed conifers and hardwoods. Existing merchantable timber is found mainly in streamside management zones and as scattered over story in previously harvested stands. All of the existing merchantable timber may be harvested to meet TNC's fiber supply agreement with PCTC. Most non-merchantable stands are fully stocked with pre-commercial thinning having been accomplished on many of the older age class stands. Many of the older age class stands will be approaching merchantable size within the next 20 - 30 years. The productivity of the lands is estimated at average to good for Western Montana and should grow at a rate of 100 – 125 board feet per acre per year. The slope of the terrain is variable with approximately 70 percent tractor ground and 30 percent line ground with minor portions that may require helicopter logging or be unavailable for forest management.

The increase in annual sustainable yield that is expected from the entire analysis area is estimated between 2 and 3 MMBF. This was estimated utilizing the HB 674 growth to market ratio of 60 percent. This figure represents the aggregated production offset which covers nonproductive lands and limiting environmental conditions that may reduce the available volume to harvest. This additional product equates to an expansion of the TLMD forest products sales by 4 to 5 percent, a \$400,000 to \$500,000 increase in sales on an average year. *Table 2* shows corresponding estimated sustainable yields with varying acreage and site productivity on forested acres.

| Table 2. Potomac Total Productivity (MMBF) | | | | | |
|---|------------------------------------|--------------|---------------------------------|--------------|--------------|
| Forest Acre BF Growth Rate | Full Analysis Area 34,200 acres | 29,300 acres | HB 674 Proposal 25,600 acres | 22,750 acres | 20,500 acres |
| 80 | 1.64 | 1.41 | 1.23 | 1.09 | 0.98 |
| 90 | 1.85 | 1.58 | 1.38 | 1.23 | 1.11 |
| 100 | 2.05 | 1.76 | 1.54 | 1.37 | 1.23 |
| 110 | 2.26 | 1.93 | 1.69 | 1.50 | 1.35 |
| 120 | 2.46 | 2.11 | 1.84 | 1.64 | 1.48 |
| 130 | 2.67 | 2.29 | 2.00 | 1.77 | 1.60 |
| 140 | 2.87 | 2.46 | 2.15 | 1.91 | 1.72 |
| 150 | 3.08 | 2.64 | 2.30 | 2.05 | 1.85 |

* Calculation includes a 60% adjustment for non-forested acres, risk of loss, and deterioration.

Fiber Supply Agreement (FSA): PCTC and TNC negotiated a FSA as part of the purchase agreement for acquisition of the lands. The FSA stipulates that over 10 years TNC is to sell PCTC 100 MMBF at a fair market price. Up to 15 MMBF of this volume could potentially come from the Potomac block. The Department identifies the FSA as an exclusive condition having no costs or benefits related to the Potomac acquisition.

Justifying this, is the Department's understanding that appraisal values in this acquisition will not reflect standing volume values, and secondly, that site productivity which affects sustainable yield will remain unchanged by the FSA.

Range: The carrying capacity and grazing practices of the property is typical of forested lands in Western Montana. It is estimated that the property will support 1,250 AUMS between June and September annually. Fencing for management of the grazing use occurs adjacent to the private lands in the Potomac valley. Several riparian areas and springs have been fenced for protection of habitat and water quality. The property is currently leased for grazing by the Bonita, Clinton, Potomac (BCP) Grazing Association, members who are all local ranchers. It is anticipated that a state grazing license would be issued to the Association.

Water: Stock water is available from many small streams and ponds on the property. Existing on the property are seven perennial creeks including Bear Creek which flows directly into the Blackfoot, and six others (Blixit, Arkansas, Camas, Norman, Game and Ashby Creek) which flow northwardly to Union Creek and eventually into the Blackfoot River. These waterways provide limited irrigation to private lands below the forested foothills. Many of the streams are fish bearing, and contain complex habitat structures. There are issues, particularly in canyon entrances to these sections, where legacy roads need to be relocated away from streambeds to prevent future BMP infractions. Precipitation is in the 15 to 25 inch range. Total permitted volume on these sections is estimated at 680,197 acre/ft, 99.9% of which is designated for fish and wildlife purposes. Additionally a total of 6,703 CFS are reserved for fish and wildlife, and 4.5 for irrigation and domestic uses; domestic and irrigation use permits total at an estimated 333 GPM; and a total of 40 stock permits are currently located within the property boundaries.

Soils: Soils within the Potomac analysis area have developed from Belt Supergroup Metasediments and generally consist of gravelly silt loams with local observations of Mazama ash and Glacial Lake Missoula lacustrine deposits.

Minerals resources: signs of historic mining activity are present in multiple sections of the property. In some areas mining waste has been located in close proximity to perennial streams. Mineral rights are not available in the acquisition and therefore future mineral resource extraction is not a foreseeable revenue source to be included in the analysis.

Other resources: Potential for agriculture, commercial, or real estate development is limited within the analysis area due to the property location, topography and history in mining and timber management. These non-timber developments are not a part of the foreseeable management approach for TLMD and will not be contributing to this analysis.

Land Values: DNRC has not yet conducted a land appraisal for any portion of the analysis area. The timing of the appraisal will likely be made near the time of closing. Land appraisal values are not critical however, to complete a cost/benefit analysis which

can interpret multiple possible land values as an alternative to utilizing an appraised value.

Initial speculation placed land values at \$800/ per acre. At this purchase price, the \$21,000,000 not including transaction costs would purchase up to 26,250 acres. For the purpose of setting a central value we will utilize \$800/ acre and purchase 25,000 acres. At this price the land purchase will cost exactly \$20.5 million.

Table 3. Stratified Purchase Prices at \$20.5 million

| Acre Price | Full Analysis Area 34,200 acres | 29,300 acres | HB 674 Proposal 25,600 acres | 22,750 acres | 20,500 acres |
|------------|------------------------------------|--------------|---------------------------------|--------------|--------------|
| \$400 | \$13,680,000 | \$11,720,000 | \$10,240,000 | \$9,100,000 | \$8,200,000 |
| \$500 | \$17,100,000 | \$14,650,000 | \$12,800,000 | \$11,375,000 | \$10,250,000 |
| \$600 | \$20,500,000 | \$17,580,000 | \$15,360,000 | \$13,650,000 | \$12,300,000 |
| \$700 | \$23,940,000 | \$20,500,000 | \$17,920,000 | \$15,925,000 | \$14,350,000 |
| \$800 | \$27,360,000 | \$23,440,000 | \$20,500,000 | \$18,200,000 | \$16,400,000 |
| \$900 | \$30,780,000 | \$26,370,000 | \$23,040,000 | \$20,500,000 | \$18,450,000 |
| \$1,000 | \$34,200,000 | \$29,300,000 | \$25,600,000 | \$22,750,000 | \$20,500,000 |

* Prices may not be exact from rounding.

Conservation and Recreation

Habitat: The Potomac Lands analysis area is approximately 34,200 acres and is situated in the west portion of Montana Fish, Wildlife and Parks (FWP) big game hunting district 292. Topography ranges from low rolling foothills near the Potomac Valley to steep, rugged mountains and rocky talus. Elevations range from approximately 3,500 feet in the Blackfoot River Valley up to about 6,000 feet on upper ridges near Olson Peak. Steep slopes on southerly exposures below 5,500 feet in this area provide important winter range for elk, mule deer and white-tailed deer.

Habitats on these lands are primarily comprised of coniferous forest types. Ponderosa pine types occur at low elevations on drier sites. Douglas-fir and western larch dominated types are common at intermediate elevations, and lodgepole pine and subalpine fir types can be found at higher elevations. Engelmann spruce is also present, particularly in cool wet locations. There is an extensive existing road system on these lands, and the density of mature trees is relatively low across most of the acreage due to past commercial logging. Over the next several decades, and assuming limited occurrence of wildfire on these lands, considerable growth and improvement in habitat conditions for many species is likely to occur.

Tables 4 and 5 identify sensitive, threatened and endangered species that may be impacted by management of the property.

| Table 4. Threatened and Endangered Species | | |
|--|---|--|
| Species | Habitat type | Suitable Habitat Present |
| Lynx (<i>Felis lynx</i>) | Mosaics of dense sapling and old forest greater than 5,000 ft elevation | Habitat types suitable for use by Canada lynx are present. Those with the greatest potential for appreciable use are those farthest east near Garnet. |
| Gray Wolf (<i>Canis Lupus</i>) | Ample big game populations and security from human activity | Habitat and prey populations in this area are potentially suitable for gray wolves. |
| Grizzly Bear (<i>Ursus arctos</i>) | Recovery areas and security from human activity | Habitat is potentially present for grizzly bears. This area is just outside of the occupied habitat boundary described by Wittinger (2001), however, in recent years grizzly bears have been observed near the eastern portion of these lands. |

Table 5. DNRC Sensitive Species

| Species | Habitat type | Suitable Habitat Present |
|---|--|--|
| Bald Eagle (<i>Haliaeetus leucocephalus</i>) | Late-successional forest less than 1 mile from open water | Lands in this block situated along the Blackfoot River are used by bald eagles throughout the year. Uplands likely receive some use by wintering eagles feeding on ungulate carrion. |
| Black-Backed Woodpecker (<i>Picoides arcticus</i>) | Mature to old burned or beetle-infested forest | Black-backed woodpecker habitat is potentially present in this area following stand-replacing wildfire events that periodically occur. |
| Fisher (<i>Martes pennanti</i>) | Dense mature to old forest less than 6,000 ft elevation and riparian | Fishers have not been documented in this area, however, habitat is potentially present, particularly in association with major streams and drainages. |
| Flammulated Owl (<i>Otus flammeolus</i>) | Late-successional ponderosa pine and Douglas-fir forest | Flammulated owl habitat is present in warm ponderosa pine and Douglas-fir stands. |
| Peregrine Falcon (<i>Falco peregrinus</i>) | Cliff features near open foraging areas and/or wetlands | Several peregrine falcon nest sites are associated with the Blackfoot River in this area, thus these lands have potential for use for foraging habitat by peregrines. |
| Pileated Woodpecker (<i>Dryocopus pileatus</i>) | Late-successional ponderosa pine and larch-fir forest | Pileated woodpecker habitat occurs on these lands and several individuals have been detected in this area. |
| Townsend's Big-Eared Bat (<i>Plecotus townsendii</i>) | Caves, caverns, old mines | Presence of these bats has been documented for this area. |

* Species presence information based on local knowledge and MNHP database query (9/9/09).

Big Game Species: White-tailed deer are present and locally abundant in this area. Elk are present and relatively abundant in this hunting district. FWP issued 150 antlerless permits for this district in 2009. Mule deer are present and locally abundant in this area. Moose are occasionally present in this area. Bighorn sheep are present in this area and they are commonly seen along Highway 200 and on the steep slopes near Bonner. Black bears are present in this area. Mountain lions are present in this area.

Other Species: Similar to many forested lands in western Montana, these parcels provide habitat for all of the mountain grouse species, wild turkeys, raptors, numerous songbirds and neotropical migrants, small mammals, snowshoe hares, long-tailed weasels, bobcats, red foxes, coyotes and other common endemic species.

Aquatic species: The Potomac Block includes the watersheds for Bear Creek and numerous tributaries to Union Creek, including Game, Ashby, Arkansas and Camas creeks. All of the watersheds contribute flow to the Blackfoot River. Numerous fish species are present in the Potomac Block, including westslope cutthroat trout, eastern brook trout, and rainbow trout. All of the watersheds historically contained high-quality fish habitats; however impacts due to grazing, mining, road locations adjacent to stream channels, permanent removal of riparian vegetation, and fish passage impairments have greatly reduced the quality of many of these fish habitats. Many existing road locations adjacent to fish-bearing streams will be chronic land management problems in the future

and may never be able to be brought up to full BMP standards without complete relocation. DNRC, FWP, TNC, and TU are currently collaborating to jointly apply for a Western Competitive Grant that would fix 8 major road-stream crossing/water quality problem sites in the Potomac Block before DNRC takes ownership of the lands.

Hunting access: Overall, hunter access is good with a number of access locations and considerable walk-in hunting opportunities. From a recreation perspective, this report views this proposed acquisition as an opportunity to maintain public access for hunting of deer, elk, moose and other species including black bear, mountain lion and upland game birds. State ownership also provides possible beneficial use as an area of study to pursue wildlife and wildlife habitat research. Montana Fish Wildlife and Parks (FWP) have in the past conducted surveys estimating revenues spent by hunters in various hunting districts. In 2006, FWP estimated a total of \$2 million was spent in the entirety of hunting district 292 from a total of 1,888 hunters and 12,516 hunter days.

ATV/Snowmobile access: ATV use occurs within portions of the analysis area. Signs of moderate use are present around the property. DNRC has at times contemplated opportunities to license ATV/Snowmobile trail systems but at this point, none have been established. Trail system development has the potential to generate future trust revenues.

Cost/Benefit Analysis

Timber: The performance of the Potomac property as an investment depends heavily on timber and timber markets. Revenues from timber represent 96 percent of the total potential net benefit from ownership, but are difficult to estimate accurately. When sales occur depends on information that may not be certain at the time of purchase. A sizeable block such as the Potomac contains a broad uneven age inventory and a subsequent timber management plan at best represents a general estimation of when and where management will occur. In addition to predicting sale prep and harvest events, timber prices are sensitive to business cycles and market events that are invisible to investors. Prices can impact sale times as well as sale value and add greater uncertainty to financial modeling of timberlands.

For the purpose of this analysis future timber prices are set with an expectation for long term steady-state growth occurring in national timber demand. Such an expectation stems from the assertion that wood based products, ranging from construction materials to energy, compete against a dwindling bundle of non-renewable substitutes including mined materials and fossil fuels. And although U.S. housing and energy markets are demonstrating their susceptibility to adjustment periods, in the long run they will tend to grow in positive relation to the nation's population.

Programmatically, the forest management bureau has maintained an approximate 2 to 1 ratio of revenue and expenditures across all timber sales. The baseline estimate for timber revenues in this analysis is formed utilizing these ratios, current prices, and a long run average 3 percent inflation rate (all prices in analysis are inflated at this rate).

Sustainable Yield: The most critical assumption in this cost/benefit analysis is that increased sustainable yield will occur as a result of the Potomac acquisition. Making this assumption allows timber sales and revenue to be measured in perpetuity. It is this perpetuity that drives the overall investment strength. Without it, the NPV of the land purchase would be negative, meaning that investors would not be able to recoup the value of the investment over any amount of time.

The key to an expanding sustainable yield is site productivity. Potomac acres, regardless of the current inventory, carry a potential to grow trees overtime. These growth rates regulate and justify the TLMD sustainable yield. Factors which can alter these rates will thus change the economics of the investment. The growth rate selected for this analysis is the same as that estimated in the HB 674 fiscal note. The calculation begins with a maximum acre productivity of 150 BF/year. This is multiplied by a 60 percent factor, to adjust for non-forested acres, and other factors which limit the amount of timber that will actually move to market over time. The final average site productivity for a Potomac acre is thus set at 90 BF/year. Once again, the Department is collecting field information to verify or refine this number. This report will be updated to reflect any changes as they become known.

Grazing: Grazing licenses are of a more predictable income. Aside from drought events, carrying capacity will likely remain static over the course of the analysis period. Currently, Potomac analysis area carries approximately 1,250 AUM's. Higher elevation lands such as these offer a shorter grazing season. Herd size in this case runs at an estimated 312 cow/calf pairs.

Appreciation: Land appreciation is a hidden link to property investment strength. In typical land acquisitions, appreciation makes up 70 to 80 percent of the return on a land purchase. Unlike its cash counterpart, appreciation is illiquid and strengthens equity alone. Until a time of sale, appreciation remains missing from the list of realized gains. Lands purchased by TLMD are high performing compared to sections deemed suitable for sale. Consequently, lands purchased will not likely be resold, leaving appreciation off the table as captured revenue. Still, it is important for TLMD to manage and maintain performance in its equity position as well as earning cash for school trusts.

Long term nominal appreciation on Potomac lands are expected in the 5 to 7 percent range. This range of returns has been observed long term on lands in similar class categories across Montana. Sources identified in the TLMD Return on Asset Report provide a basis from which these values have been estimated. In addition, appraisers working for DNRC have validated these returns as being the reasonable and expected range.

Tax base: One of the consequences of the investment will be the removal these lands from their tax levy districts. *Table 6* displays 2008 taxes paid to county governments from these parcels, a sum totally of nearly \$40,000 in tax revenue.

| Table 6. 2008 Potomac Taxes | | | | | |
|------------------------------------|----------------|----------------|--------------|-----------------|-----------------|
| Levy District | Bonner | Clinton | Greenough | Potomac | Total |
| 11-2 | | | | \$26,093 | \$26,093 |
| 14-2 | \$6,496 | | | | \$6,496 |
| 30-2 | | | \$923 | | \$923 |
| 32-2 | | \$6,376 | | | \$6,376 |
| Total | \$6,496 | \$6,376 | \$923 | \$26,093 | \$39,888 |

Estimating a NPV: The methodology utilized in many cost/benefit analysis is in actuality a comprehensive net present value (NPV) calculation. By definition an NPV isolates positive and negative values occurring over time, discounts them to a present value and sums them together. This operation is performed at the bottom of *Table 7*. Here a baseline NPV is estimated using inputs and three potential acquisitions, stratified by total acres purchased and purchase price. The inputs selected are those representing the most current expected values provided by staff within TLMD and other sources. For the baseline, land values were set at \$600, \$800, and \$1000 per acre and the corresponding acreage that could be afforded with the borrowed funds.

The NPV for 25,600 acres is \$3.1 million. This NPV is positive, indicating a returned value greater than the initial cost of purchasing the land. To interpret the meaning of a

\$3.1 million NPV it is simplest to think of it as the cash-in-hand value of all future net benefits that will be returned through ownership of this property. Corresponding to the \$3.1 million NPV is an estimated annual cash return of 1.124% for the purchase of 25,600 acres. The estimated average total return on asset, including appreciation, is 7.124%.

Table 7 also shows the increasing value associated with being able to buy Potomac land at a cheaper price and in greater acreage. The more land acquired in the purchase and the cheaper the purchase price; the more value can be recovered from the investment. The increase in NPV between cases is primarily a reflection of the corresponding changes to estimated sustainable yield.

| Table 7. NPV Baseline | | | |
|------------------------------|------------------------------------|---------------------------------|---------------------|
| | Full Analysis Area 34,200 acres | HB 674 Proposal 25,600 acres | 20,500 acres |
| Acres | 34,200 | 25,600 | 20,500 |
| Price _{ACFE} | \$600 | \$800 | \$1,000 |
| Appreciation | 6.0% | 6.0% | 6.0% |
| Growth _{BF} | 150 | 150 | 150 |
| SY _{MBF} | 3,078 | 2,304 | 1,845 |
| Price _{MBF} | \$200 | \$200 | \$200 |
| Cost _{MBF} | \$100 | \$100 | \$100 |
| AUM | 1,250 | 936 | 749 |
| Price _{AUM} | \$7.00 | \$7.00 | \$7.00 |
| Cost _{AUM} | \$0.80 | \$0.80 | \$0.80 |
| Inflation | 3.0% | 3.0% | 3.0% |
| Real <i>r</i> | 1.0% | 1.0% | 1.0% |
| Present Values | | | |
| Cost _{LAND} | \$20,520,000 | \$20,480,000 | \$20,500,000 |
| Revenue _{AUM} | \$875,000 | \$654,971 | \$524,488 |
| Cost _{AUM} | \$100,000 | \$74,854 | \$59,942 |
| Revenue _{MBF} | \$61,560,000 | \$46,080,000 | \$36,900,000 |
| Cost _{MBF} | \$30,780,000 | \$23,040,000 | \$18,450,000 |
| NPV | \$11,035,000 | \$3,140,117 | -\$1,585,453 |

Table 8 and Table 9 demonstrate the sensitivity of key assumptions made in Table 7 for the case of a 25,600 acre purchase. In Table 8, site productivity on forest acreages is altered to show what happens to the NPV of the investment. In this example, an average site productivity of 110 BF per acre would contribute to a \$6 million reduction in NPV from the case of an average site productivity of 150 BF per acre. This is a significant enough change to turn NPV for the investment negative, and demonstrates a loss to investors. Table 9 reviews a similar reduction in NPV from varying the long term

average cost to sell timber. As the mean sale prep cost is changed to \$120 per MBF, NPV lowers to a present loss of \$1.4 million.

No cost/benefit analysis is a complete guide to the values of a policy decision. Beyond this financial analysis there are many additional factors involved with the Potomac acquisition that cannot fully be measured in monetary terms. Recreational use, opportunity value, and other public goods may go a long way in balancing out the risk, loss, or other financial concerns of investors. Knowing how far these non-market values go requires social value information associated with the land which remains mostly unattainable.

| Table 8. NPV & Growth_{BF} Sensitivity | | | |
|---|---------------------------------|---------------------------------|---------------------------------|
| | HB 674 Proposal 25,600 acres | HB 674 Proposal 25,600 acres | HB 674 Proposal 25,600 acres |
| Acres | 25,600 | 25,600 | 25,600 |
| Price _{ACFE} | \$800 | \$800 | \$800 |
| Appreciation | 6.0% | 6.0% | 6.0% |
| Growth _{BF} | 110 | 130 | 150 |
| SY _{MBF} | 1,690 | 1,997 | 2,304 |
| Price _{MBF} | \$200 | \$200 | \$200 |
| Cost _{MBF} | \$100 | \$100 | \$100 |
| AUM | 936 | 936 | 936 |
| Price _{AUM} | \$7.00 | \$7.00 | \$7.00 |
| Cost _{AUM} | \$0.80 | \$0.80 | \$0.80 |
| Inflation | 3.0% | 3.0% | 3.0% |
| Real <i>r</i> | 1.0% | 1.0% | 1.0% |
| Present Values | | | |
| Cost _{LAND} | \$20,480,000 | \$20,480,000 | \$20,480,000 |
| Revenue _{AUM} | \$654,971 | \$654,971 | \$654,971 |
| Cost _{AUM} | \$74,854 | \$74,854 | \$74,854 |
| Revenue _{MBF} | \$33,792,000 | \$39,936,000 | \$46,080,000 |
| Cost _{MBF} | \$16,896,000 | \$19,968,000 | \$23,040,000 |
| NPV | -\$3,003,883 | \$68,117 | \$3,140,117 |

| <i>Table 9. NPV & Cost_{MBF} Sensitivity</i> | | | |
|--|---------------------------------|---------------------------------|---------------------------------|
| | HB 674 Proposal 25,600 acres | HB 674 Proposal 25,600 acres | HB 674 Proposal 25,600 acres |
| Acres | 25,600 | 25,600 | 25,600 |
| Price _{ACRE} | \$800 | \$800 | \$800 |
| Appreciation | 6.0% | 6.0% | 6.0% |
| Growth _{BF} | 150 | 150 | 150 |
| SY _{MBF} | 2,304 | 2,304 | 2,304 |
| Price _{MBF} | \$200 | \$200 | \$200 |
| Cost _{MBF} | \$120 | \$110 | \$90 |
| AUM | 936 | 936 | 936 |
| Price _{AUM} | \$7.00 | \$7.00 | \$7.00 |
| Cost _{AUM} | \$0.80 | \$0.80 | \$0.80 |
| Inflation | 3.0% | 3.0% | 3.0% |
| Real <i>r</i> | 1.0% | 1.0% | 1.0% |
| Present Values | | | |
| Cost _{LAND} | \$20,480,000 | \$20,480,000 | \$20,480,000 |
| Revenue _{AUM} | \$654,971 | \$654,971 | \$654,971 |
| Cost _{AUM} | \$74,854 | \$74,854 | \$74,854 |
| Revenue _{MBF} | \$46,080,000 | \$46,080,000 | \$46,080,000 |
| Cost _{MBF} | \$27,648,000 | \$25,344,000 | \$20,736,000 |
| NPV | -\$1,467,883 | \$836,117 | \$5,444,117 |

Conclusion

The Potomac property is a rugged and heavily utilized landscape, but from an investment perspective it measures up as a tremendous asset to the State of Montana. This property will expand the total trust timber inventory and provide opportunities for TLMD to increase its presence in supplying Montana's forest products sector. The conclusion reached in this cost/benefit analysis is that, monetarily speaking, the advantage of an increased sustainable yield is great enough to justify the purchase of the Potomac property. This conclusion is supported by a \$3.1 million estimated NPV and an average cash return of 1.124% for the purchase of 25,600 acres at \$800/acre. An NPV of \$3.1 million is determined utilizing TLMD historical program revenues and costs and other consistent assumptions. Alterations to this analysis are anticipated when additional stand level inventory data from the property become available.

Appendix

Legal Description:

Township 12 North, Range 15 West, P.M.M. Missoula County

| | |
|---|--------|
| Section 1: Lots 1-4 & S2S2 | 339.24 |
| Section 2: Lots 1-4, SW4NE4, S2NW4, SW4, W2SE4 & NE4SE4 | 4.68 |
| Section 3: Lots 1 & 2, S2NE4 & S2 | 486.58 |
| Section 4: Lots 3 & 4, S2NW4 & S2 | 483.70 |
| Section 5: Lots 1-4, S2N2 & S2 | 647.60 |
| Section 6: Lots 1-7, S2NE4, SE4NW4, E2SW4 & SE4 | 717.64 |
| Section 7: Lots 1-4, E2W2 & E2 | 695.00 |
| Section 8: N2 & NE4SE4 | 360.00 |
| Section 9: S2 320.00 Section 10: NW4NE4, N2NW4 & SW4NW4 | 160.00 |
| Section 17: N2, SW4 & N2SE4 | 560.00 |
| Section 19: Lots 1-4, E2W2 & E2 | 695.96 |
| Section 20: SE4NE4, NE4SE4, S2S2 & NE4SW4 | 280.00 |
| Section 21: S2N2 & S2 | 480.00 |
| Section 28: ALL | 640.00 |
| Section 29: ALL | 640.00 |

Township 12 North, Range 16 West, P.M.M. Missoula County

| | |
|--|--------|
| Section 1: Lots 1-12 & S2 | 744.72 |
| Section 2: Lots 1-12 & S2 | 749.32 |
| Section 3: Lots 1-14, SW4, NW4SE4 & NE4SE4, minus mining claim | 49.20 |
| Section 4: Lots 1-10 & 12 & S2 | 721.20 |
| Section 5: Lots 1-12 & S2 | 766.64 |
| Section 6: Lots 1, 2, 7, 8, 9, 10 & N2SE4 | 305.43 |
| Section 9: NE4, NE4SW4, N2SE4 & SE4SE4 | 320.40 |
| Section 11: N2, SE4 & E2SW4 | 560.00 |
| Section 12: ALL | 640.00 |
| Section 13: ALL | 640.00 |
| Section 14: ALL | 640.00 |
| Section 15: ALL | 640.00 |
| Section 22: ALL | 640.00 |
| Section 23: ALL | 640.00 |
| Section 24: SE4 | 160.00 |

Township 12 North, Range 17 West, P.M.M. Missoula County

| | |
|---|--------|
| Section 1: Lots 1-7, SW4NE4, W2SE4, S2NW4 & SW4 | 666.30 |
|---|--------|

Township 13 North, Range 15 West, P.M.M. Missoula County

| | |
|----------------------|--------|
| Section 33: W2 & SE4 | 480.00 |
|----------------------|--------|

Township 13 North, Range 16 West, P.M.M. Missoula County

| | |
|--|-----------|
| Section 6: Lot 7 south of the Blackfoot River, SE4SW4 & SW4SE4 | 100.00 |
| Section 7: Lot 1-4 except Bear Creek Acres, E2W2 & SE4 | 469.62 |
| Section 19: Lots 1-4, E2W2 & E2 | 647.44 |
| Section 20: SW4, S2NW4 & NW4NW4 | 280.00 |
| Section 28: SW4SW4, S2NW4SW4, SE4, S2NE4 & E2SW4 | 420.00 |
| Section 29: W2, W2E2, W2E2NE4, SE4NE4SE4, W2NE4SE4 & SE4SE4 | 590.00 |
| Section 30: Lots 1-4, E2W2 & E2 647.28 | |
| Section 31: Lots 1-4, E2W2 & E2 642.40 | |
| Section 32: ALL | 640.00 |
| Section 33: ALL | 640.00 |
| Section 34: SW4, S2NE4 & SE4 less portion east of Morrison Lane. | 392.00 |
| Township 13 North, Range 17 West, P.M.M. Missoula County | |
| Section 1: Portion lying south of Highway 200 | 226.70 |
| Section 2: Portion lying south of Highway 200 | 175.40 |
| Section 9: SE4NW4, S2NE4 and S2 lying south of Highway 200 | 367.30 |
| Section 10: S2 | 320.00 |
| Section 11: Portion lying south of Highway 200 | 607.20 |
| Section 12: ALL | 640.00 |
| Section 13: ALL | 640.00 |
| Section 14: ALL | 640.00 |
| Section 15: Lots 1-7, SE4NE4, S2NW4, SW4 & W2SE4 | 627.88 |
| Section 17: NE4 | 160.00 |
| Section 21: Lot 1, NE4NW4, S2NW4, NE4 & S2 | 640.20 |
| Section 22: Lots 1-4, W2E2 & W2 | 629.82 |
| Section 23: ALL | 640.00 |
| Section 24: S2 & NW4 | 480.00 |
| Section 25: ALL | 640.00 |
| Section 26: Lots 1-7, S2NW4, SW4NE4, W2SE4 & SW4 | 620.28 |
| Section 27: Lots 1-4, S2N2 & S2 | 640.19 |
| Section 28: ALL | 640.00 |
| Section 34: ALL | 640.00 |
| Section 35: Lots 1-7, S2NW4, SW4NE4, W2SE4 and SW4 | 639.55 |
| Total | 34,226.87 |